Electric Vibrators Need Overload Protection!

By Billy Dougherty

Often, users of rotary electric vibrators will avoid use of overload protection (O/L) either by not equipping their controls with O/Ls, or defeating them if installed – it's a costly bad practice.

What Will An O/L Do For Me?

O/Ls are relays, which have current measuring devices in them and adjustment of current sensitivity. If excessive current goes on for too long a time period (both how long and how excessive determines when an O/L trips), the relay will open which shuts down the vibrator. The O/L will need to be reset (some O/Ls do that automatically) before the vibrator can be restarted. Often, some delay (usually a few minutes) is required before the O/L can be reset. This allows a "hot" motor to cool off. **Excessive heat is the enemy of motors!**

NOTE: An in-line motor fuse is NOT overload protection. Fuses are designed for protection of wiring, not motors. As such, they have very different trip/open vs time characteristics (compared with O/Ls).

Yet, there is no question that, with the right choice of an O/L device, and O/L adjusted to the right setting for the vibrator being powered, that the O/L will reduce the number of motor burnout events – significantly extending the life of the vibrator.

Unlike almost all industrial electric motors, the amount of current sent to a vibrator motor is greatly influenced by its application. Poor vibrator mounting, for example, or running the vibrator on an empty bin are conditions the equivalent of adding additional load to a large motor. For example, if a conveyor with a normal amount of material upon it requires a 20 HP motor to run, how long will the motor last if so much additional material is dumped onto the conveyor that it would now require a 40 HP motor? If this were to occur, either the material put on the conveyor must be reduced/limited, or the motor size upgraded, otherwise the 20 HP motor will burnout. Whether using a 20 HP, a 40 HP motor, or any size motor, it should be electrically protected with an O/L – it prevents burnout if excessive loading occurs.

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Consider The Costs

The most commonly used bin vibrators vary in cost from $400 to $1,200. If you choose not to protect the vibrator, when it fails (when – not if), the costs are considerable:

- Lost/reduced production time (material does not flow or flows slowly without vibration)
- The cost of a new vibrator
- System shut-down for maintenance
- The labor and material needed to remove old and install new vibrator
- The purchase and install of motor starter with O/L relay

These costs are considerably more than the initial protection (an ounce of prevention vs a pound of cure). Overload protection, in the form of a motor starter containing a 3-pole contactor and O/L relay, which will turn the vibrator off if excessive current for too long a time occurs, costs roughly $350 for the basic components, or up to $2000 for a sophisticated assembled version, complete with NEMA 4 enclosure, industrial grade pushbuttons, and timers for system automation.

Final Thoughts

Often the tripping of an O/L is looked upon as a nuisance, an annoyance. It is not looked upon as a signal that some form of corrective action is required. To address this problem, some firms have installed alarm signals, either audible, visible, or centrally logged on a computer, which automatically alerts maintenance to a problem. Often the cure is simple, fast, and inexpensive, such as re-tightening vibrator mounting bolts, or uncovering that the vibrator was being run on an empty bin. (Running on an empty bin could be automatically prevented with a level indicator's output denying power to the vibrator's starter.

Overload protection does involve an investment on the part of the company. ROI on the investment will take place if the motor protection is allowed to function, and information from overload events are both shared and acted upon. Ignoring an overload event is like ignoring an SOS from the vibrator or any other motor.

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Thanks for reading this post. If you'd like to know more about the subject or have any questions about getting the most out of your electric vibrators or vibratory motors and equipment, **please drop us a line.**